ERRATUM: ON THE QUATERNIONIC p-ADIC L-FUNCTIONS ASSOCIATED TO HILBERT MODULAR EIGENFORMS

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This erratum provides a correction to the main theorem given in [8], most notably the discussion of μ-invariant in [8, Theorem 1.1 (iii)], plus a list of other corrections.

To begin with, let us clarify two conventions in [8]. First, we define ring class characters of K in the more general sense of [1], so that the restriction to the finite adeles of F must be everywhere unramified (rather than trivial). At the same time, we later consider only those ring class characters which factor through the quotient $G_{\mathfrak{p}^\infty} = \varprojlim_n G_{\mathfrak{p}^n} \approx \mathbf{Z}_p^\delta$, whose restrictions to the finite adeles of F are necessarily trivial. Second, the word "supersingular" is used abusively to refer exclusively to the special setting where $a_\mathfrak{p} = 0$ (and is defined this way in [8, p. 1006, line 14]).

The interpolation formulae of the main result [8, Theorem 1.1] should include certain normalization factors, as well as extra factors in the so-called supersingular case, plus a correction to the characterization of the μ-invariants. Let us for ease of reading first summarize these main corrections (with an indication of proof) in the following revised statement of [8, Theorem 1.1]. Given an integer $n \geq 1$, let $m(\mathcal{O}_{\mathfrak{p}^n})$ denote the volume of $\widehat{\mathcal{O}}_{\mathfrak{p}^n}^\times$ in the space $K^\times \backslash \mathbf{A}_K^\times / \mathbf{A}_F^\times$ with respect to our fixed choice of Haar measure. Let $h(\mathcal{O}_F)$ denote the class number of F. Let us also write $G_0 = G[\mathfrak{p}^\infty]_{\mathrm{tors}}$ to denote the torsion subgroup of $G[\mathfrak{p}^\infty] = \varprojlim_n G[\mathfrak{p}^n]$, and $\epsilon = \mathrm{ord}_\mathfrak{P}(|G_0|)$ the order of $\mathfrak{P}$ dividing the order of G_0. Recall that we normalize the quaternionic eigenform Φ to take values in the $\mathcal{O}$, including the value $1 \in \mathcal{O}$, and that this choice of normalization determines Φ uniquely up to multiplication by a unit in $\mathcal{O}$. Let us then define $\mu = \mu(\mathcal{L}_\mathfrak{p}(\mathbf{f}, K_{\mathfrak{p}^\infty})) \geq 0$ to be the largest integer for which $\mathcal{L}_\mathfrak{p}(\mathbf{f}, K_{\mathfrak{p}^\infty}) \in \mathfrak{P}^\mu \mathcal{O}[[G[\mathfrak{p}^\infty]]]$. Recall that we fix an embedding $\overline{\mathbf{Q}} \rightarrow \overline{\mathbf{Q}}_p$.

Theorem 0.1. *Let $\mathbf{f} \in \mathcal{S}_2(\mathfrak{N})$ be a cuspidal Hilbert eigenform of parallel weight 2, trivial nebentype character, and level $\mathfrak{N} \subset \mathcal{O}_F$ for which $\mathrm{ord}_\mathfrak{p}(\mathfrak{N}) = 1$, as in* [8].

(i) *If $\mathbf{f}$ is $\mathfrak{p}$-ordinary, then there is a nontrivial element $\mathcal{L}_\mathfrak{p}(\mathbf{f}, K_{\mathfrak{p}^\infty}) \in \mathcal{O}[[G[\mathfrak{p}^\infty]]]$ such that the following formula holds in $\overline{\mathbf{Q}}_p$: Given ρ a primitive ring class character of conductor $\mathfrak{p}^n$ (factoring through $G_{\mathfrak{p}^\infty}$) for n sufficiently large,*

$$\rho\left(\mathcal{L}_\mathfrak{p}(\mathbf{f}, K_{\mathfrak{p}^\infty})\right) = \frac{\alpha_\mathfrak{p}^{-2n} \cdot \zeta_F(2)}{2 \cdot L(\pi, \mathrm{ad}, 1)} \cdot \left(\frac{h(\mathcal{O}_F)}{m(\mathcal{O}_{\mathfrak{p}^n})}\right)^2 \times \left[L(\pi, \rho, 1/2) \cdot L(\pi, \rho^{-1}, 1/2) \cdot \prod_{v \nmid \infty} \alpha(\Phi_v, \rho_v) \cdot \alpha(\Phi_v, \rho_v^{-1})\right]^{\frac{1}{2}}.$$

(ii) *If $\mathbf{f}$ is $\mathfrak{p}$-supersingular (as above), then there are nontrivial elements $\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty})^{\pm} \in \mathcal{O}[[G[\mathfrak{p}^\infty]]]$ such that the following formulae hold in $\overline{\mathbf{Q}}_p$: Given ρ a primitive ring class character of conductor $\mathfrak{p}^n$ (factoring through $G_{\mathfrak{p}^\infty}$) for n sufficiently large and for which $-\varepsilon = (-1)^n$ (for $\varepsilon = \pm$ the sign),*

$$\rho\left(\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty})^{\pm}\right) = C_n(\rho)^2 \cdot \frac{\zeta_F(2)}{2 \cdot L(\pi, \mathrm{ad}, 1)} \cdot \left(\frac{h(\mathcal{O}_F)}{m(\mathcal{O}_{\mathfrak{p}^n})}\right)^2$$
$$\times \left[L(\pi, \rho, 1/2) \cdot L(\pi, \rho^{-1}, 1/2) \cdot \prod_{v \nmid \infty} \alpha(\Phi_v, \rho_v) \cdot \alpha(\Phi_v, \rho_v^{-1})\right]^{\frac{1}{2}}.$$

Here, the fudge factor $C_n(\rho)$ is defined as follows: Fixing a set of topological generators $\gamma_1, \ldots, \gamma_\delta$ of $G_{\mathfrak{p}^\infty} \approx \mathbf{Z}_p^\delta$, and writing $\Sigma_{p^n}(T)$ to denote the p^n-th cyclotomic polynomial in $T+1$ (whose roots take the form $\zeta - 1$ for $\zeta \in \mu_{p^n}$),

$$C_n(\rho) = \begin{cases} \prod_{\substack{j=1 \\ j \equiv 0(2)}}^{n} \prod_{i=1}^{\delta} \Sigma_{p^n}(\rho(\gamma_i) - 1) & \text{if } n \text{ is even} \\ \prod_{\substack{j=1 \\ j \equiv 1(2)}}^{n} \prod_{i=1}^{\delta} \Sigma_{p^n}(\rho(\gamma_i) - 1) & \text{if } n \text{ is odd.} \end{cases}$$

(iii) *Let $\nu = \nu_\Phi \geq 0$ denote the largest integer for which the quaternionic form Φ associated to $\mathbf{f}$ is congruent to a constant modulo $\mathfrak{P}^\nu$, i.e. so that $\Phi \equiv \vartheta \mod \mathfrak{P}^\nu$ for some constant function $\vartheta \in \mathcal{S}_2^B(H; \mathcal{O})$. We have that $\mu(\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty})) \geq 2\nu - \epsilon$ in the $\mathfrak{p}$-ordinary case, and similarly that $\mu(\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty})^{\pm}) \geq 2\nu - \epsilon$ in the so-called $\mathfrak{p}$-supersingular case.*

Indication of proof. Note that constructions of the elements are as given in [8], at least up to the corrections described below, as so we consider only the interpolation formulae and μ-invariants for the moment. The normalization factors defined above should be added as follows in the proof of [8, Theorem 4.10], specifically for the identification with the period integral on the first displayed line of [8, p. 1035] and the last two displayed lines of [8, p. 1033] (cf. [10, (5)]). To be more precise, let us assume that n is sufficiently large that the natural map $\mathrm{Pic}(\mathcal{O}_F) \to \mathrm{Pic}(\mathcal{O}_{\mathfrak{p}^n})$ is an injection. If ρ is a primitive ring class character of conductor $\mathfrak{p}^n$ factoring through $G_{\mathfrak{p}^\infty}$, then it is easy to see that it factors through the finite adelic quotient

$$\widehat{K}^\times / \widehat{F}^\times K^\times \widehat{O}_{\mathfrak{p}^n}^\times = \mathrm{Pic}(\mathcal{O}_{\mathfrak{p}^n}) / \mathrm{Pic}(\mathcal{O}_F).$$

Since ρ is invariant under $\widehat{\mathcal{O}}_{\mathfrak{p}^n}^\times$, we can write the period $l(\Phi, \rho)$ as a finite sum:

$$l(\Phi, \rho) = \int_{\mathbf{A}_K^\times / \mathbf{A}_F^\times K^\times} \Phi(t)\rho(t)dt = m(\mathcal{O}_{\mathfrak{p}^n}) \sum_{\widehat{K}^\times / \widehat{F}^\times K^\times \widehat{\mathcal{O}}_{\mathfrak{p}^n}^\times} \Phi(t)\rho(t).$$

On the other hand, we can decompose our sum over $X_n = \mathrm{Pic}(\mathcal{O}_{\mathfrak{p}^n}) / \mathrm{Pic}(\mathcal{O}_F)$ into

$$\sum_{A \in X_n} \rho(A)\Phi(A) = \sum_{\tau \in \mathrm{Pic}(\mathcal{O}_F)} \sum_{t \in \mathrm{Pic}(\mathcal{O}_{\mathfrak{p}^n}) / \mathrm{Pic}(\mathcal{O}_F)} \rho(t)\Phi(\tau t),$$

using that ρ is trivial on $\mathrm{Pic}(\mathcal{O}_F)$. Observe now that for any choice of $\tau \in \mathrm{Pic}(\mathcal{O}_F)$, the inner sum satisfies the property that

$$\begin{aligned}&\sum_{t \in \mathrm{Pic}(\mathcal{O}_{\mathfrak{p}^n})/\mathrm{Pic}(\mathcal{O}_F)} \rho(t)\Phi(\tau t)\\ &= \sum_{\tau^{-1}t \in \mathrm{Pic}(\mathcal{O}_{\mathfrak{p}^n})/\mathrm{Pic}(\mathcal{O}_F)} \rho(\tau^{-1}t)\Phi(t) = \sum_{t \in \mathrm{Pic}(\mathcal{O}_{\mathfrak{p}^n})/\mathrm{Pic}(\mathcal{O}_F)} \rho(t)\Phi(t),\end{aligned}$$

from which it follows that

$$\sum_{A \in X_n} \rho(A)\Phi(A) = |\mathrm{Pic}(\mathcal{O}_F)| \sum_{t \in \mathrm{Pic}(\mathcal{O}_{\mathfrak{p}^n})/\mathrm{Pic}(\mathcal{O}_F)} \rho(t)\Phi(t).$$

Hence, we have shown that

$$\sum_{A \in X_n} \rho(A)\Phi(A) = \frac{h(\mathcal{O}_F)}{m(\mathcal{O}_{\mathfrak{p}^n})} \cdot l(\Phi, \rho),$$

from which the claimed formula follows after dividing out by $\alpha_{\mathfrak{p}}^n$ where needed in the ordinary case (i). In the so-called supersingular case (ii), we make an extra argument following those Pollack [5, §5.2] or Kobayashi [4, (3.4), (3.5)] to derive the interpolation formula with extra factors. To be more precise, recall that we define in the notations of [8, Proposition 4.6] (after Darmon-Iovita [2]) an element

$$\mathcal{L}_{\mathfrak{p}}(\Phi, K)^{\pm} = \vartheta_{\Phi}^{\pm}(\vartheta_{\Phi}^{\pm})^* = \begin{cases} (-1)^{\frac{n}{2}}\Theta_{\Phi}^{+}((-1)^{\frac{n}{2}}\Theta_{\Phi}^{+})^* & \text{if } n \text{ is even} \\ (-1)^{\frac{n+1}{2}}\Theta_{\Phi}^{-}((-1)^{\frac{n+1}{2}}\Theta_{\Phi}^{-})^* & \text{if } n \text{ is odd.} \end{cases}$$

Here, $\Theta_{\Phi}^{\pm} \in \Lambda/\Omega_n^{\pm}$ is the unique element such that $\vartheta_{\Phi,n} = \widetilde{\Omega}_n^{\mp}\Theta_{\Phi}^{\pm}$, where

$$\begin{aligned}\widetilde{\Omega}_n^{+} &= \widetilde{\Omega}_n^{+}(T_1, \ldots, T_\delta) = \prod_{\substack{j=1 \\ j\equiv 0(2)}}^{n} \xi_j(T_1, \ldots, T_\delta)\\ \widetilde{\Omega}_n^{-} &= \widetilde{\Omega}_n^{-}(T_1, \ldots, T_\delta) = \prod_{\substack{j=1 \\ j\equiv 1(2)}}^{n} \xi_j(T_1, \ldots, T_\delta)\end{aligned}$$

and

$$\xi_n(T_1, \ldots, T_\delta) = \prod_{i=1}^{\delta} \Sigma_{p^n}(T_i), \quad \Sigma_{p^n}(T) \text{ the } p^n\text{-th cyclotomic polynomial in } T+1.$$

Granted such a description, we see that the specialization to a primitive ring class character ρ of conductor $\mathfrak{p}^n$ factoring through $G_{\mathfrak{p}^\infty}$ introduces extra factors coming from the $\widetilde{\Omega}_n(T_1, \ldots, T_\delta)|_{(T_1,\ldots,T_\delta)=(\rho(\gamma_1)-1,\ldots,\rho(\gamma_\delta)-1)}$, i.e. for $\gamma_1, \ldots, \gamma_\delta$ the fixed set of topological generators of $G_{\mathfrak{p}^\infty} \approx \mathbf{Z}_p^{\delta}$. To be more precise, we argue that we obtain the stated extra extra factor $C_n(\rho)^2$, where

$$C_n(\rho) = \rho(\widetilde{\Omega}_n^{\pm}) = \begin{cases} \prod_{\substack{j=1 \\ j\equiv 0(2)}}^{n} \prod_{i=1}^{\delta} \Sigma_{p^n}(\rho(\gamma_i) - 1) & \text{if } n \text{ is even} \\ \prod_{\substack{j=1 \\ j\equiv 1(2)}}^{n} \prod_{i=1}^{\delta} \Sigma_{p^n}(\rho(\gamma_i) - 1) & \text{if } n \text{ is odd.} \end{cases}$$

For (iii), let us first note that the proof given in [8, Theorem 1.1 (iii)] for the stated characterization of $\mu = \mu(\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty}))$ is not valid, as the constant term in the power series expansion of the theta element θ_Φ is in fact not given by the expression $c_\infty(\mathbf{1})$ appearing in the first displayed line of [8, p. 1036]. However, the lower bound $\mu \geq 2\nu - \epsilon$ can be justified via the following argument. We first show that it will suffice to establish the divisibility by $\mathfrak{P}^{2\nu-\epsilon}$ of the specializations $\rho(\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty})) = \rho(\theta_\Phi \theta_\Phi^*)$ for ρ any ring class character ρ of $G[\mathfrak{p}^\infty]$, i.e. assuming for simplicity that we are in the $\mathfrak{p}$-ordinary case. Keep all of the same notations and conventions with power series as given on p. 1029. Let $g = g(T_1, ..., T_\delta)$ be a nonzero power series in $\mathcal{O}[[T_1, \ldots, T_\delta]]$. If for all finite order characters ρ of $G_{\mathfrak{p}^\infty} \approx \mathbf{Z}_p^\delta$ it is true that $\mathrm{ord}_p(\rho(g))$ is greater than or equal to some integer $m \geq 0$, then we claim it is also true that the μ-invariant $\mu(g)$ is greater than or equal to m. To see why this is true, let us write A to denote the $\mathcal{O}$-Iwasawa algebra $A = \mathcal{O}[[T_1, \ldots, T_{\delta-1}]]$. Since A is a complete local ring, we can apply the Weierstrass preparation theorem to argue that $g \in A[[T_\delta]]$ is expressible uniquely in the form

$$g(T_1, \ldots, T_\delta) = \mathfrak{P}^{\mu(g)} f(T_1, \ldots, T_\delta) u(T_1, \ldots, T_\delta)$$

for $f(T_1, \ldots T_\delta) \in A[[T_\delta]]$ a distinguished polynomial and $u(T_1, \ldots, T_\delta) \in A[[T_\delta]]$ a unit. Let us now write Y to denote the set of all finite order characters of Γ which are trivial on the subgroup of Γ generated by $\gamma_1, \ldots, \gamma_{\delta-1}$. If ψ is a character in Y, then the specialization $\psi(g)$ of g to ψ is equal to $\psi(g) = \mathfrak{P}^{\mu(g)} \psi(f) \psi(u)$, where $\psi(u)$ is a p-adic unit. On the other hand, the specialization $\psi(f)$ of f to ψ takes the form

$$\psi(f) = b_0 + b_1 \psi(T_\delta) + \ldots + b_{k-1} \psi(T_\delta)^{k-1} + \psi(T_\delta)^k,$$

where each of the coefficients $b_0, \ldots, b_{k-1}$ lies in $\mathcal{O}$. Hence, when the order of ψ is sufficiently large, we see that $\mathrm{ord}_p(\psi(f)) = k \cdot \mathrm{ord}_p(\psi(T_\delta))$. Thus, we have shown that $\mathrm{ord}_p(\psi(f)) = \mu(g) + \sigma(\psi)$ for some $\sigma(\psi)$ which tends to zero as the order of ψ tends to infinity. In other words, we have shown that $\mu(g) \geq m$, as claimed.

We now claim that that the specialization $\rho(\theta_\Phi)$ is divisible by $\mathfrak{P}^\nu$ for ρ any ring class character. To see why this is, let ρ be a ring class character factoring through some quotient X_n as above. Since we know that $\rho(\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty})) = \rho(\theta_\Phi)\rho^{-1}(\theta_\Phi)$, it will suffice to show that $\rho(\theta_\Phi), \rho^{-1}(\theta_\Phi) \geq \nu$. This latter assertion follows easily from the definition of the specialization of $\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty})$ to characters of X_n, using orthogonality relations. To be more precise, we have for the elements constructed in case (i) the relation

$$\rho(\theta_\Phi) = \alpha_{\mathfrak{p}}^{-n} \sum_{A \in X_n} \rho(A)\Phi(A) \equiv \alpha_{\mathfrak{p}}^{-n} \sum_{A \in X_n} \rho(A)\vartheta(A) \equiv 0 \mod \mathfrak{P}^\nu.$$

Here, the last congruence follows from the fact that the values $\vartheta(A)$ do not depend on the classes A. The same argument shows that $\rho^{-1}(\theta_\Phi) \equiv 0 \mod \mathfrak{P}^\nu$, as well as the analogous assertions for the elements constructed in (ii). To deduce the final part of the claim, we consider the image of $\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty})$ under the canonical injection of completed group rings

$$\mathcal{O}[[G[\mathfrak{p}^\infty]]] \longrightarrow \bigoplus_{\rho_0 \in G_0^\vee} \mathcal{O}[[G_{\mathfrak{p}^\infty}]], \ \mathcal{L} \longmapsto \left(\rho_0(\mathcal{L})\right)_{\rho_0}, \tag{1}$$

and then for each component under the non-canonical isomorphism of completed group rings $\mathcal{O}[[G_{\mathfrak{p}^\infty}]] \approx \mathcal{O}[[T_1, \ldots, T_\delta]]$, and then apply the observation about power series given above. If p does not divide the order of the torsion subgroup G_0, then the canonical injection (1) is a bijection, making stated property (iii) easy to deduce. In general, the cokernel of (1) is annihilated by the order $|G_0|$ of the torsion subgroup G_0 of $G[\mathfrak{p}^\infty]$, and hence by $\mathfrak{P}^\epsilon$ for $\epsilon = \mathrm{ord}_{\mathfrak{P}}(|G_0|)$. In this way, we deduce the claimed bound $\mu(\mathcal{L}_{\mathfrak{p}}^{(\delta)}(\Phi, K)) \geq 2\nu - \epsilon$. The lower bounds can be established in a similar way for the invariants $\mu(\mathcal{L}_{\mathfrak{p}}^{(\delta)}(\Phi, K)^{\pm})$ in the so-called supersingular case, as is consistent with the descriptions given by [6, Theorem 1.1 (2)] and also [3]. □

Now, here is a list of other errors and corrections:

p. 1008, [8, Theorem 1.1 (iii)]. As noted above, the characterization of $\mu(\mathcal{L}_{\mathfrak{p}}(\mathbf{f}, K_{\mathfrak{p}^\infty}))$ is not proven in Theorem 4.14, as the constant term in the power series expansion of θ_Φ is not in fact given by the expression $c_\infty(\mathbf{1})$ appearing in the first displayed line of p. 1036. However, the lower bound $\mu \geq 2\nu - \epsilon$ can be justified via the line of argument given above.

p. 1009, Proof of Theorem 1.3: The argument is only sketched, and the reference to [9] should be replaced by a reference to [10].

p. 1009, line 20: The j should be a k.

p. 1012, line 4: The space is treated as zero if π_v is a discrete *series.*

p. 1012, line 8: The discussion here means that we choose the quaternion algebra B so that its ramification set $\mathrm{Ram}(B)$ equals Σ.

p. 1013, Corollary 2.5: The statement of requires some modification if the residue degree $\delta = [F_{\mathfrak{p}} : \mathbf{Q}_p]$ is greater than one. More precisely, if $\delta = 1$, then the stated result is easy to deduce from either the cited algebraicity theorem of Shimura [7] or else Weierstrass preparation (after Cornut-Vatsal [1]). If on the other hand δ is greater than one, then all that can be deduced is the nonvanishing of each of the Galois conjugate twists. Thus if $L(\pi, \rho, 1/2)$ does not vanish for some ring class character ρ, then the same is true for each $L(\pi, \rho^\sigma, 1/2)$, where σ runs over the automorphisms of $\mathbf{C}$ which fix the Hecke field $\mathbf{Q}(\pi)$. In other words, if ρ has exact order p^x say, then $L(\pi, \rho', 1/2) \neq 0$ for each of the $\varphi(p^x)$ many ring class characters ρ' of exact order p^x. Thus, for each of the good $\rho \in P(n, \rho_0)$ in the statement of Theorem 2.4, nonvanishing can be deduced for each $L(\pi, \rho', 1/2)$ for ρ' in the Galois orbit of ρ. The stronger assertion that nonvanishing occurs for all but finitely many $\rho \in Y$ can then be deduced in the special case where the residue degree δ equals one.

p. 1015, Lemma 3.1: The double cosets are not necessarily disjoint. Also, the union should be over classes $F_+^\times \backslash \widehat{F}^\times / F_{\mathfrak{p}}^\times \widehat{\mathcal{O}}_F^\times$, i.e. over the quotient of the narrow class group by the subgroup generated by the class of $\mathfrak{p}$.

p. 1017, line 11. The description of the Hecke operator $U_{\mathfrak{p}}$ on c_Φ requires more justification if the prime $\mathfrak{p}$ is not principal. The general case is treated in [9].

p. 1017, line -5. The orientation s, t is chosen arbitrarily.

p. 1018, line 14. The $\mathrm{End}_{F_{\mathfrak{p}}}(L)$ should be $\mathrm{End}_{\mathcal{O}_{F_{\mathfrak{p}}}}(L)$.

p. 1019, Proposition 3.7. Though not given explicitly, the case of $\mathfrak{p} \mid \mathfrak{M}$ is proven in a similar way.

p. 1023, line 22. The line should read "... use the Yuan-Zhang-Zhang generalization of Waldspurger's theorem ..."

p. 1023, final line: We should in fact mod out by $\mathcal{O}_{F_{\mathfrak{p}}}^{\times}$ in the domain of r_K, and this affects all subsequent definitions in the obvious way.

p. 1026, line 12. The claim that the functions $\Phi_{K,j}$ descend to functions on the quotients $\mathcal{H}_j$ requires justification, as the subsequent clauses in lines 13-15 are nonsense. See the construction given in [9] for a corrected discussion of these issues.

p. 1028, final line. The H_∞ should be replaced by a $\mathcal{H}_\infty$.

p. 1029, lines 6-7. A more explicit account of how the construction of θ_Φ depends on the choice of directed edgeset (as would be appropriate here) is given in [9, §4].

p. 1031, statement of Lemma 4.7. The subscript should be $n \equiv (-1)^n$.

p. 1035, lines 16-18. To define the anticyclotomic μ-invariant, we normalize the eigenform Φ to take values in $\mathcal{O}$, and in such a way that it takes value $1 \in \mathcal{O}$. Cf. the discussions in [6] and [9, §4] for more details.

Finally, let us note that a more general construction has now been given in the preprint [9] using purely representation theoretic language, although this latter work only treats the ordinary case, and does not include any discussion of the analytic μ-invariant (or Howard's criterion). Still, it should be possible to use this latter approach to give a more general and uniform treatment of all of these ideas.

References

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